

CLAIMS:

1. A method of manufacturing an optical data storage medium, comprising at least one substrate (11) and a plurality of layers deposited on the substrate (11), including at least one of a transparent spacer layer and transparent cover layer (12), which layer is provided by applying a liquid onto the rotating substrate (11) and rotating the substrate (11)

5 further in order to spread out the liquid into a layer substantially uniformly between an inner radius r_i and an outer radius r_o , and solidifying the liquid layer (12) by means of exposure to UV radiation, characterized in that:

- after applying the liquid onto the rotating substrate the liquid layer (12) is heated by heating means (14) in such a way that,

10 - the temperature rise of the liquid layer (12) at r_i has a value δT_{ri} while,

- the temperature rise of the liquid layer (12) between r_i and r_o gradually increases,

- the temperature rise of the liquid layer (12) at r_o has a value $\delta T_{ro} > \delta T_{ri}$.

2. A method as claimed in claim 1, wherein the temperature rise between r_i and r_o

15 has a radial temperature profile with a shape substantially resembling the shape of a radial thickness profile resulting when δT_{ro} and δT_{ri} would be zero.

3. A method as claimed in claim 1 or 2, wherein the heating means (14) comprise

an infra red heating device (14) projecting IR radiation onto the substrate (11) in an area with

20 a radius larger than r_i for causing a desired radial temperature profile in the liquid layer (12).

4. A method as claimed in claim 1 or 2, wherein the heating means comprise a

heated chuck on which the substrate is mounted during rotation, said chuck having a heated surface for causing a desired radial temperature profile in the liquid layer (12).

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5. A method as claimed in claim 1 or 2, wherein the heating means comprise a directed flow of heated gas emanating from a nozzle for causing a desired radial temperature profile in the liquid layer (12).

6. A method as claimed in any one of claims 1-5, wherein a few mm wide outer peripherical zone of the substrate (11) is shielded by a mask (16) in order to prevent exposure of the liquid layer in this zone to UV radiation.

5 7. A method as claimed in claim 6, wherein after the exposure of the liquid layer (12) in the exposed portion, the substrate (11) is rotated at a rotation frequency sufficiently high to substantially remove the non exposed liquid (12b) in the outer peripherical zone from the substrate (11).

10 8. A method as claimed any one of the preceding claims, wherein the exposure takes place in an atmosphere containing oxygen and at an exposure intensity leaving a few μm top portion of the liquid layer (12) unsolidified by means of oxygen inhibition.

9. An optical data storage medium manufactured using the method of claim 8,

15 wherein additionally:

- a stamper is pressed into the unsolidified top portion of the liquid layer (22),
- subsequently the top portion is solidified by exposure to radiation,
- the stamper is separated from the top portion of the completely solidified liquid layer (22),
- further layers are provided for finalization of the optical data storage medium.

20 10. An optical data storage medium according to claim 9, wherein the stamper (23) is transparent to UV radiation and the top portion is solidified by UV radiation which is projected through the transparent stamper (23).

25 11. An apparatus for performing the method of any one of claims 1 - 8 comprising

- means for receiving a substrate (11) and a plurality of layers deposited on the substrate (11),
- means for rotating the substrate (11),
- means for providing at least one of a transparent spacer layer and transparent cover layer (12), by applying a liquid onto the rotating substrate (11) and rotating the substrate (11)

30 further in order to spread out the liquid into a layer substantially uniformly between an inner radius r_i and an outer radius r_o , and

- means (14) for heating the liquid layer after applying the liquid onto the rotating substrate (12) in such a way that,

* the temperature rise of the liquid layer (12) at r_i has a value δT_{ri} while,

- * the temperature rise of the liquid layer (12) between r_i and r_o gradually increases,
- * the temperature rise of the liquid layer (12) at r_o has a value $\delta T_{r_o} > \delta T_{r_i}$.
- means for solidifying the liquid layer (12) by exposure to UV radiation directly after the heating step.

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12. An apparatus as claimed in claim 11, wherein the means for heating comprise an infrared heating device (14) projecting IR radiation onto the substrate (11) in an area with a radius larger than r_i for causing a desired radial temperature profile in the liquid layer (12).
- 10 13. An apparatus as claimed in claim 11, wherein the means for heating comprise a heated chuck on which the substrate is mounted during rotation, said chuck having a heated surface for causing a desired radial temperature profile in the liquid layer (12).
14. An apparatus as claimed in claim 11, wherein the means for heating comprise 15 a directed flow of heated gas emanating from a nozzle for causing a desired radial temperature profile in the liquid layer (12).
15. An apparatus as claimed in any one of claims 11-14, wherein a mask (16) for 20 shielding a few mm wide outer peripheral zone of the substrate (11) is present in order to prevent exposure of the liquid layer (12) in this zone to UV radiation.